## 4.2 Scale Diagrams

If you look at a map you may see something that says 1cm represents 12km.

**Scale** is a comparison between the actual size of an object and the size of its diagram. It can be expressed as a ratio, as a fraction, as a percent, in words, or in a diagram. In the above example of the map what is the scale as a ratio and a fraction?

A **scale diagram** is a drawing that is similar to the actual figure or object. It may be smaller or larger than the actual object, but must be in the same **proportions**.

Review of fractions and ratios

| Fraction | Ratio | Percent |
|---|---|---|
| $\frac{1}{2}$ | | |
| | 1:4 | |
| | | 75% |
| $\frac{2}{10}$ | | |
| | 1:50 | |
| | | 100% |

Review of equivalent fractions/ratios

$$\frac{1}{2} = \frac{2}{4} = \frac{3}{\quad} = \frac{\quad}{8} = \frac{100}{\quad} = \frac{\quad}{50} = \frac{\quad}{144} = \frac{10.5}{\quad}$$

$$1:2 = 2:4 =$$

How do you find out what $x$ is in the proportion below

$$\frac{1}{14} = \frac{5.5}{x}$$

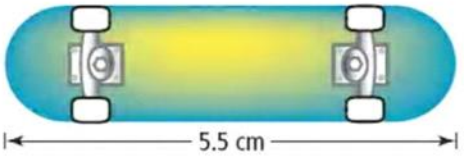
Try these:

$$\frac{1}{4} = \frac{12.5}{x}$$

$$\frac{1}{1200} = \frac{x}{6000}$$

## Using Scale to determine the actual length of an object

The scale diagram of a skateboard uses a scale of 1:14. What is the actual length of the skateboard?




Method 1: Use the scale

Method 2: Use a Proportion

## Determining Scale Factor

The flying distance from Dawson City to Whitehorse is 540 km. The distance shown on the map is 3 cm.

**a)** Complete the following to express the map scale in words.

scale: 1 cm represents ■ km

**b)** What is the scale factor?
Hint: 1 km = 100 000 cm.


Scale = diagram measurement divided by actual measurement

ASSIGNMENT: p. 142 #2, 5-10, 12, 15, 18